Landscape Fragmentation and Urban Sprawl in Pierce County, WA

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The spatial patterns of urban sprawl can be systematically mapped, monitored and accurately assessed utilizing remote sensing and GIS technologies. Mapping urban sprawl provides information as to where sprawl is occurring, helps to identify the social and environmental resources threatened by sprawl, and provides information on likely future directions and patterns of sprawling growth. Besides a plethora of social impacts, urban sprawl has significant impacts on ecosystems and environmental resources by fragmenting habitat across the landscape. Habitat fragmentation, connectivity, patches and spatial structure are important landscape metrics. This research addresses the landscape impacts of urban sprawl in Pierce County, WA. from 1988 to 2004. In order to examine the amount of landscape fragmentation and landscape change, a time series analysis of Landsat TM and Landsat ETM+ imagery was used. Satellite imagery was used to create base maps of urban, agricultural, and forest lands. Landscape metrics were then calculated for each landscape type by date and compared. Thus far, analysis shows that the landscape has transitioned from one that was slightly fragmented to one that is highly fragmented with distinctly smaller and frequent habitat patches. The methods of analysis will eventually be applied to landscapes across the Puget Sound Region.